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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the application of:

Stephen J. Ruiz

Serial No. 09/716,113

Filed: November 16, 2000

For: **AERODYNAMIC STANDOFFS TO
AIR COOL DISC TYPE AUTO BRAKE
ROTORS**

Examiner: X. Nguyen

Art Unit: 3683

APPEAL BRIEF

Commissioner for Patents
Washington, D.C. 20231

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GROUP 3600

Dear Sir:

Applicants submit, in triplicate, the following Appeal Brief pursuant to 37 C.F.R. § 1.192 for consideration by the Board of Patent Appeals and Interferences. Applicants authorize the Commissioner to charge a payment in the amount of \$160.00 to cover the cost of filing the opening brief as required by 37 C.F.R. § 1.17(c) to Deposit Account No. 02-2666.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

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TABLE OF CONTENTS

	Page
I. <u>REAL PARTY IN INTEREST</u>	1
II. <u>RELATED APPEALS AND INTERFERENCES</u>	1
III. <u>STATUS OF CLAIMS</u>	1
IV. <u>STATUS OF AMENDMENTS</u>	1
V. <u>SUMMARY OF THE INVENTION</u>	2
VI. <u>ISSUES</u>	3
VII. <u>GROUPING OF CLAIMS</u>	3
VIII. <u>ARGUMENT</u>	4
IX. <u>CONCLUSION AND RELIEF</u>	11
X. <u>APPENDIX</u>	12

I. REAL PARTY IN INTEREST

Stephen J. Ruiz, the party named in the caption, assigned his rights to that disclosed in the subject application through an assignment recorded on November 16, 2000 (011309/0566) to Stop Technologies, Inc. of Torrance, California. Thus, as owner at the time the brief is being filed, Stop Technologies, Inc. of Torrance, California, is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1, 3-21, and 23-40 are pending in the present application. Claims 4, 7-20, 24 and 27-40 have been withdrawn from consideration by the Examiner. A final Office Action was mailed on August 22, 2002. A response to the final Office Action was filed on September 30, 2002. An Advisory Action was mailed on October 15, 2002. A response to the Advisory Action was mailed on November 14, 2002. A notice of Appeal was filed by facsimile on November 22, 2002. An Advisory Action was mailed on November 25, 2002. No further action has been received from the Examiner as of this date.

IV. STATUS OF AMENDMENTS

On September 30, 2002, Applicants filed an amendment in response to a August 22, 2002 Office Action (final) for consideration by the Examiner. The

Examiner issued an Advisory Action on October 15, 2002, indicating that the amendments in the August 22, 2002 response would be entered for purposes of Appeal. The claims remain as amended in the August 22, 2002 response.

V. SUMMARY OF THE INVENTION

The present invention concerns a mounting hat for a brake rotor. The mounting hat has a lower section that is connected to an upper section. Aerodynamically shaped standoff vanes each having a leading edge, a trailing edge, a top, and a bottom connected to the upper section. The aerodynamically shaped standoff vanes space apart the upper section from a brake rotor. The leading edge and the trailing edge of the standoff vanes are curved. Vents are formed between adjacent aerodynamically shaped standoff vanes. The vents are circumferentially distributed on the upper section. Air located within the mounting hat and air deflected from the brake rotor are induced to substantially flow through the vents in a direction outward from a radial interior of the mounting hat to a radial exterior of the mounting hat.

Yet another embodiment of the invention concerns a brake rotor system. The brake rotor system includes a rotor and a hub connected to the rotor. The hub has aerodynamically shaped standoff vanes. Each of the standoff vanes have a leading edge, a trailing edge, a top, a bottom and vents formed between adjacent aerodynamically shaped standoff vanes. The vents are circumferentially distributed between the hub and the rotor. Air located within the hub and air deflected from the rotor are induced to substantially flow through the vents in a direction outward from a radial interior of the hub to a radial exterior of the hub. The aerodynamically shaped standoff vanes space apart the hub from the rotor. The leading edge and the trailing edge of the aerodynamically shaped standoff vanes are curved.

VI. ISSUES

The issue involved in this appeal are as follows:

Under 35 U.S.C. § 103(a), Claims 1, 3, 5, 6, 21, 23, 25 and 26 as being unpatentable over Applicant's admitted prior art illustrated in Figures 1 and 2 in view of U.S. Patent No. 5,427,212 issued to Shimazu et al. ("Shimazu") in view.

VII. GROUPING OF CLAIMS

Applicants contend that the claims can be divided into **two** groups and that each group of claims is separately patentable for the reasons asserted below and in the Arguments. Note that the claims that have been withdrawn from consideration do not appear in any groups. These groups are as follows:

Group I - Claims 1, 3, 5, and 6

Group II - Claims 21, 23, 25 and 26

The claims of Groups I are apparatus claims. The claims of Groups II are system claims. Claims 1 and 21 are each independent claims. Each independent claim contains distinguishable limitations from one another and also from the prior art at issue (see below and Argument section), and thus, each independent claim and its associated dependent claims are separately patentable. Since each independent claim and its associated dependent claims are separately grouped, each group is separately patentable. Since each group is separately patentable, and each group contains an independent claim and its associated dependent claims, each independent claim and its associated dependent claims stands or falls together. Further, see the discussion below and also the Argument section for additional reasons how each group is separately patentable, and therefore, why each group of claims should stand or fall together.

Claim 1 contains the limitations of "A mounting hat for a brake rotor comprising:..." Since no other independent claims (i.e., 21) relate to a mounting hat for a brake rotor containing the same limitations as claim 1, **Group I is separately patentable** (See also arguments below). Since claims 3, 5 and 6 depend directly or indirectly on claim 1, **claims 1, 3, 5 and 6 stand or fall together.**

Claim 21 contains the limitations of "A brake rotor comprising:..." Since no other independent claims (i.e., claim 1) relates to a brake rotor containing the same limitations as claim 21, **Group II is separately patentable** (See also arguments below). Since claims 23, 25 and 26 directly or indirectly depend on claim 21, **claims 23, 25 and 26 stand or fall together.**

VIII. ARGUMENT

A. It is asserted in the Final Office Action that claims 1, 3, 5-6, 21, 23 and 25-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's admitted prior art illustrated in Figures 1 and 2 in view of U.S. Patent No. 5,427,212 issued to Shimazu et al. ("Shimazu"). This rejection is respectfully traversed for the reasons that Applicant's admitted prior art illustrated in Figures 1 and 2 in view of Shimazu does not anticipate the limitations disclosed in claims 1, 3, 5-6, 21, 23, and 25-26. The following discussion sets forth in detail Applicants' analysis with respect to the patentability of claims 1, 3, 5-6, 21, 23, and 25-26.

1. Claim 1 relates to a mounting hat (See Figures 3-5). The mounting hat has a lower section (320) coupled to an upper section (310). A plurality of aerodynamically shaped standoff vanes (302) each having a leading edge, a trailing edge, a top, and a bottom coupled to the upper section (310), the aerodynamically shaped standoff vanes (302) space apart the upper section (310) from a brake rotor, wherein the leading edge and the trailing edge are curved; and a plurality of vents (304) formed between adjacent aerodynamically shaped standoff vanes (302), wherein the vents (304) are circumferentially distributed on the upper section (310),

and air located within said mounting hat and air deflected from said brake rotor are induced to substantially flow through the plurality of vents in a direction outward from a radial interior of said mounting hat to a radial exterior of said mounting hat. Applicant's standoffs, add the improvement of directed air flow through vents (304), which adds additional cooling to mounting hat 300 and also to a coupled brake rotor.

Traditional standoffs, such as those illustrated in Applicant's Figures 1 and 2, allow for spacing apart a mounting hat/hub from a rotor in order to separate or "standoff" the rotor from the mounting hat. One skilled in the art should know that standoffs are used for high performance applications because if the rotor and mounting hat/hub were bolted together, the difference in heat dissipation during braking causes the two parts to expand either at different rates or at the same rate, which causes warping. If the two portions are not separated in high-performance applications, brake efficiency is reduced and instability occurs due to wobble caused by warping. The prior art standoffs were solely used to reduce wobble caused by warping. The prior art standoffs are squared and do not direct air flow in any certain direction. Therefore, the air flow from a prior art standoff typically interferes with or does not add to additional cooling of a rotor or mounting hat/hub.

It is asserted in the Advisory Actions and Final Office Action that because Shimazu discloses "changing a straight design to a curve design to improve air flow" in view of Applicant's prior art, which illustrates a standard standoff to a brake rotor, it would be obvious to combine Shimazu and Applicant's admitted prior art and result in Applicant's claimed invention. According to MPEP 2141.02 "[i]n determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. (Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); Schenck v. Nortron Corp., 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983)). Distilling an invention down to the 'gist' or 'thrust' of an invention disregards the requirement of analyzing the subject matter "as a whole." (W.L. Gore & Associates, Inc. v.

Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)).” Applicant asserts that the concept of using a standoff for the purposes of separating a mounting hat/hub and a rotor and also for increasing cooling of the rotor and mounting hat/hub by specifically directing air flow not intended to be directed must be looked at “as a whole,” not just a “gist: or “thrust” of improving air flow.

Further, under MPEP 2142 “[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.” (In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

Applicant asserts that a *prima facie* case of obviousness has not been met. First, there is neither suggestion nor motivation in Shimazu or Applicant's submitted prior art to modify a mounting hat standoff, which is typically used to separate a mounting hat/hub from a brake rotor, to act as a traditional standoff with the additional feature of becoming a specific air flow inducing vane. The problem Shimazu deals with is to reduce stagnation (Y) in a ventilation hole that lies between vanes in a brake rotor. (Shimazu, column 1, lines 17-33, Figures 4, 9, and 10). In fact, this is the major thrust of most ventilated brake rotor patents. The problem Applicant's invention concerns is how to use other parts of a brake system, which were never considered for directing air flow, in order to make brake cooling more efficacious.

Shimazu does not even consider air flow or correction of stagnation in any other part of a brake rotor system besides between the rotor discs. Applicant's prior

art only illustrates, either explicitly or implicitly, that a mounting hat/hub has a standoff that separates a mounting hat/hub from a rotor in a brake system. Nothing else can be deduced from Applicant's submitted prior art. Without reading Applicant's specification, one skilled in the art would not have thought to use a part of a brake rotor system that is used for the purpose of separating a mounting hat/hub from a rotor for the additional function of specifically directing air flow into vents formed between standoffs and the rotor in order to improve brake cooling.

Additionally, the combination of Shimazu and Applicant's submitted prior art does not teach each and every limitation contained in Applicant's claim 1, in particular "a plurality of vents formed between adjacent aerodynamically shaped standoff vanes, wherein the vents are circumferentially distributed on the upper section, and air located within said mounting hat and air deflected from said brake rotor are induced to substantially flow through the plurality of vents in a direction outward from a radial interior of said mounting hat to a radial exterior of said mounting hat." (See MPEP 2142, 2143.03; see also, In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)).

Therefore, since there is no suggestion at all, nor motivation to modify the references or combine the two to arrive at Applicant's claimed invention, and the prior art references do not "teach or suggest all the claim limitations," a *prima facie* obviousness rejection has not been made.

Moreover, according to MPEP 2143.01, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." (In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)). Nowhere in Shimazu is there a suggestion of the desire to improve cooling by using any other part of a brake rotor albeit the rotor inlet vanes. And, just by looking at Applicant's Figures 1 and 2, which illustrate a brake rotor system and separate mounting hat/hub, respectively, or knowing the

purpose of the standoffs, as one skilled in the art would, there is not a suggestion of the desire to combine Shimazu's invention with Applicant's admitted prior art.

And, Shimazu does not teach, suggest or imply that stagnation occurs in openings between standoffs. Nor does Shimazu propose a solution, conduct a study, or have anything to do with a mounting hat/hub portion coupled to a brake rotor in relation to cooling of a surface or in order to remove stagnation. Prior art standoffs space apart a mounting hat/hub from a rotor. Further, different conceptions of vane design in rotors can lead to quite different results of cooling efficiency. It is not just a curvature of a part that increases air flow. Air flow needs to be properly directed for efficiency. Air flow from one portion of a brake rotor can interfere with that of another if not designed properly.

Still further, according to MPEP 2142, [t]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention 'as a whole' would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the 'differences,' conduct the search and evaluate the 'subject matter as a whole' of the invention. The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." Applicant submits that without Applicant's disclosure, no thought, whatsoever, would have been made to design a standoff for the traditional purpose of spacing apart, and also for the added purpose where "air located within said mounting hat and air deflected from said brake rotor are induced to substantially flow through the plurality of vents in a direction outward from a radial interior of said mounting hat to a radial exterior of said mounting hat." Applicant's concept was never considered in the art of brake rotors and mounting hats.

As discussed above, neither Shimazu, Applicant's admitted prior art, or the combination of both, teach, disclose or suggest all the limitations contained in Applicant's claim 1. Since neither Shimazu nor Applicant's prior art teach, disclose or suggest the limitations contained in Applicant's claim 1, from which claims 3 and 5-6, depend on, it would not have been obvious to one of ordinary skill in the art to combine the teachings of Applicant's admitted prior art in view of Shimazu.

2. Applicants' claim 21 is an independent system claim, which is similar to claim 1 except that it is further limited to a brake rotor including a rotor and a hub. Applicant's claim 21 contains the limitations of "... a rotor, a hub coupled to the rotor, said hub having a plurality of aerodynamically shaped standoff vanes each having a leading edge, a trailing edge, a top, a bottom and a plurality of vents formed between adjacent aerodynamically shaped standoff vanes, wherein the vents are circumferentially distributed between the hub and the rotor, air located within said hub and air deflected from said rotor are induced to substantially flow through the plurality of vents in a direction outward from a radial interior of said hub to a radial exterior of said hub, the aerodynamically shaped standoff vanes space apart the hub from the rotor, and the leading edge and the trailing edge are curved."

Applicant asserts that a *prima facie* case of obviousness has not been met with respect to claim 21. First, there is neither suggestion nor motivation in Shimazu or Applicant's submitted prior art to modify a mounting hat standoff, which is typically used to separate a mounting hat/hub from a brake rotor, to act as a traditional standoff with the additional feature of becoming a specific air flow inducing vane. As discussed above, the problem Shimazu deals with is to reduce stagnation (Y) in a ventilation hole that lies between vanes in a brake rotor. Shimazu does not even consider air flow or correction of stagnation in any other part of a brake rotor system besides between the rotor discs. In particular, the design of Applicant's aerodynamic standoff vanes and vents formed between are such that "air located within said hub and air deflected from said rotor are induced to substantially flow through the plurality of vents in a direction outward from a radial interior of said hub to a radial

exterior of said hub.” Shimazu simply does not teach, disclose, nor suggest such limitations.

Applicant’s prior art only illustrates, either explicitly or implicitly, that a mounting hat/hub has a standoff that separates a mounting hat/hub from a rotor in a brake system. Nothing else can be deduced from Applicant’s submitted prior art. As discussed above, without exploring Applicant’s specification, one skilled in the art would not have thought to use a part of a brake rotor system that is used for the purpose of separating a mounting hat/hub from a rotor for the additional function of specifically directing air flow into vents formed between standoffs and the rotor in order to improve brake cooling.

Additionally, the combination of Shimazu and Applicant’s submitted prior art does not teach each and every limitation contained in Applicant’s claim 21, in particular “a plurality of vents formed between adjacent aerodynamically shaped standoff vanes, wherein the vents are circumferentially distributed between the hub and the rotor, air located within said hub and air deflected from said rotor are induced to substantially flow through the plurality of vents in a direction outward from a radial interior of said hub to a radial exterior of said hub, the aerodynamically shaped standoff vanes space apart the hub from the rotor, and the leading edge and the trailing edge are curved.” (See MPEP 2142, 2143.03; see also, In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)).

Therefore, since there is no suggestion at all, nor motivation to modify the references or combine the two to arrive at Applicant’s claimed invention, and the prior art references do not “teach or suggest all the claim limitations,” a *prima facie* obviousness rejection has not been made with respect to Applicant’s claim 21. Additionally, the claims that directly or indirectly depend from Applicant’s claim 21, namely claims 23 and 25-26, are also not obvious over Applicant’s admitted prior art as illustrated in Figures 1 and 2 in view of Shimazu for the same reasons.

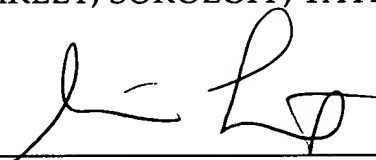
Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection is respectfully requested.

IX. CONCLUSION AND RELIEF

Based on the foregoing, Applicants request that the Board overturn the rejection of all pending claims and hold that all of the claims of the present application are allowable.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN



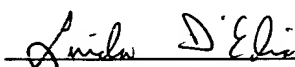
Dated: December 26, 2002

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CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited as First Class Mail, with sufficient postage, with the United States Postal Service in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on December 26, 2002.



Linda D'Elia

December 26, 2002

X. APPENDIX

The claims involved in this Appeal are as follows:

1. (Three Times Amended) A mounting hat for a brake rotor comprising:
a lower section coupled to an upper section,
a plurality of aerodynamically shaped standoff vanes each having a leading edge, a trailing edge, a top, and a bottom coupled to the upper section, the aerodynamically shaped standoff vanes space apart the upper section from a brake rotor, wherein the leading edge and the trailing edge are curved; and
a plurality of vents formed between adjacent aerodynamically shaped standoff vanes, wherein the vents are circumferentially distributed on the upper section, and air located within said mounting hat and air deflected from said brake rotor are induced to substantially flow through the plurality of vents in a direction outward from a radial interior of said mounting hat to a radial exterior of said mounting hat.
3. The mounting hat of claim 1, wherein the leading edge and the trailing edge of the plurality of aerodynamically shaped standoff vanes are one of stepped up and ramped up from the upper section towards the top of the plurality of aerodynamically shaped standoff vanes.
5. (Amended) The mounting hat of claim 1, wherein the leading edge and the trailing edge of the plurality of aerodynamically shaped standoff vanes are asymmetrical from a center point along each of the leading edge and the trailing edge.
6. The mounting hat of claim 1, wherein the top of the plurality of aerodynamically shaped standoff vanes is bored to accept one of a drive pin, a bolt, and a lug.

21. (Three Times Amended) A brake rotor comprising:

a rotor,

a hub coupled to the rotor, said hub having a plurality of aerodynamically shaped standoff vanes each having a leading edge, a trailing edge, a top, a bottom and a plurality of vents formed between adjacent aerodynamically shaped standoff vanes, wherein the vents are circumferentially distributed between the hub and the rotor, air located within said hub and air deflected from said rotor are induced to substantially flow through the plurality of vents in a direction outward from a radial interior of said hub to a radial exterior of said hub, the aerodynamically shaped standoff vanes space apart the hub from the rotor, and the leading edge and the trailing edge are curved.

23. The brake rotor of claim 21, wherein the leading edge and the trailing edge of the plurality of aerodynamically shaped standoff vanes are one of stepped up and ramped up towards the top of the plurality of aerodynamically shaped standoff vanes.

25. (Amended) The brake rotor of claim 21, wherein the leading edge and the trailing edge of the plurality of aerodynamically shaped standoff vanes are asymmetrical from a center point along each of the leading edge and the trailing edge.

26. The brake rotor of claim 21, wherein the top of the plurality of aerodynamically shaped standoff vanes is bored to accept one of a drive pin, a bolt, and a lug.